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## Fish Passage at Landsburg

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In 2002, substantial progress was made in realizing one of the most significant opportunities for expanding habitat available to chinook salmon in the Puget Sound region. The City of Seattle's Cedar River Habitat Conservation Plan included the commitment to construct fish passage facilities at Landsburg Dam (RM 21.8) to restore anadromous access to portions of the Cedar River and its tributaries that have been inaccessible for a century. Acting on the need to respond to the listing of Puget Sound chinook and to contribute to the recovery of other anadromous species, the City accelerated the completion date for the passage project by five years. Passage facilities will allow chinook and coho salmon and steelhead trout to have the opportunity to access approximately 20 miles of mainstem and tributary habitat surrounded by a 90,000 acre protected watershed.

To achieve upstream passage, two migration barriers needed to be addressed. The lower barrier was created by a large water supply pipeline that created a 4-5 ft "step" in the river. Extensive evaluation of options and work with the members of the Cedar River Anadromous Fish Committee, resource agency engineers and others resulted in selection of an option that looks and functions like a higher-gradient section of river. By creating a series of rock "steps", fish are able to move upstream without the delay that is often associated with conventional fish ladders. This aspect of the project was completed in August, in time for the 2002 chinook run. In the first year, four chinook redds were observed in the newly accessible spawning area between the pipeline crossing and Landsburg Dam. Spawning sockeye and coho also used this area.

Much of the construction of the fish ladder at Landsburg Dam, the other barrier to upstream passage, was completed in 2002. Remaining work on upstream and downstream fish passage facilities will be completed by the end of 2003.

By September, 2003, chinook will have access to over 12 miles of mainstem habitat upstream of Landsburg Dam. This area includes substantial spawning and rearing area. A study of available habitat in the mainstem between Landsburg and Cedar Falls by Riley *et al* (2001) found that total habitat amounts to 405,000 m<sup>2</sup>, with riffles making up the highest proportion (35%) of the total area, followed by step pools (30%), flatwaters (26%), pools (8%) and cascades (1%). In addition, more than 78,000 m<sup>2</sup> of habitat is available in tributaries along this reach of the Cedar River. Estimates of populations of resident trout, as well as baseline nutrient profiles have been developed to document pre-passage conditions.

The lead design consultant for the project is Montgomery Watson who was supported by GeoMax on design of the passage structures below the pipeline. The general contractor is Natt McDougal Company. This project benefited from the involvement by resource agency engineers and biologists, the Muckleshoot Tribe staff and representatives of stakeholder groups. Collectively, this extensive input and guidance to Seattle Public Utilities helped to identify the

significant issues that needed to be addressed and to develop design solutions that have a high probability of success in aiding salmon recovery in the Cedar River.

Reference cited:

Riley, S.R., P.M. Kiffney, and C. Inman. 2001. Cedar River Habitat Inventory and Salmonid Stock Assessment. Report to Seattle Public Utilities. 58pp. See <http://www.cityofseattle.net/util/CedarRiverHCP>.